Plant Operations Notebook, PN-97-00-00.2

This pocket notebook was used by Edison, probably in 1898, primarily for calculations relating to Ogden operations. Included are calculations regarding costs, depreciation, profits, and losses, as well as financial obligations and resources. The book also contains some calculations that seem related to the production capacity of the Ogden works. In addition, there are notes and calculations regarding the Ortiz gold mine and a list of various types of mills. The pages are unnumbered. Approximately 70 pages have been used. The book has been filmed at a reduction ratio of 10:1.

One Shift

285
280 Hard

Coal.

Dryer No 1	5 tons	11.65	14	00
" No 2	2 "	4.65	5	60
" No 3	1	2.33	2	80
15 ovens	15 tons	20.60	44	80
Babcock	10 "	18.50	28	50
Climax PH	14 tons	46.44	38	50
Climax Bkr	6 "	15.00	16	50
Vulcan & Victor	4 "	10.60	11	00
Locomotives	2 "	5.30	5	50
Dam wood equivalent	2 tons		5	50
			139	77
Blacksmith 2.65 5.65		147	172	80
Oil waste etc			20	00

[illegible] 20 tons [illegible]

Power plant Day shift		
2 firemen	3	25
1 Engineer	2	50
1 Dynamo Tender	1	50
1 Indicator	1	25
1 General electrician	3	00
2 day asst "	3	00
1 Repairer	1	50
	16	00

1 fireman 1 Engr 1 Elec

Power Plant Night shift		
2 firemen	3	25
1 Engineer	2	50
1 Dynamo Tender	1	50
1 Indicator	1	25
2 Night Electricians	3	50
	12	00

Crushing plant day shift			
1	Dynamo tender 1.00	1	25
1	Engineer 2.00	3	00
4	Chainers	5	00
2	Top men	2	75
1	Giant + Int. 1.35	1	35
1	Roller feed 1.35	1	35
1	Bottom Elev 1	1	25
3	Small roll 3.75	4	20
2	Crane 3.50	3	50
1	Dryer furnace 1.50	1	50
1	" asst	1	25
1	" Fireman 1.50	1	75
1	Conveyor 3	1	75
1	1+2 Conveyor 1.35	1	40
1	Cleaner	1	25
1	Foreman	2	50
1	Manager 2.50	4	00
		39	05

Crushing Plant Night shift			
1	Dynamo tender	1	25
1	Engineer	3	00
4	Chainers	4	00
2	Top men	2	75
1	Giant + Int.	1	35
1	Roller feed	1	35
1	Bottom Elev 1	1	25
3	Small rolls	4	20
2	Crane	3	50
1	Dryer slack	1	50
1	" " asst	1	25
1	" Foreman	1	75
1	Conveyor 3	1	75
1	1+2 Conveyor	1	40
1	Cleaner	1	25
1	Foreman	2	50
		35	05

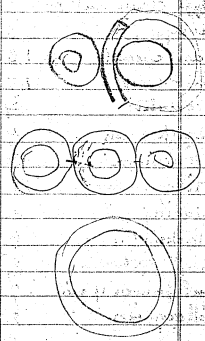
Mill 1 Day shift		
Supt	5	00
Foreman	3	00
Under stock house	1	25
Runway 4+5	1	25
Top 4+5	1	75
Underneath floor	1	60
2 3 High men	3	20
Pit	1	60
Middle Mill	1	60
Southern	1	60
Top Dryer 2	1	50
Dryer fireman	1	35
14 mesh screens	1	75
14 " magnets	1	60
Top Elevator 4+5	1	60
Over 8" magnets	1	50
8" magnets	1	75
4 "	2	00
Belt machine	1	60
Blower floor	1	60
Sand house	1	50
Stockhouse 2	1	50
2 cleaners	2	70
Boy	1	00
Oiler	1	50
2 firemen	3	25
1 Coal passer	1	25
2 Engineers	6	00
	56	80

Night Shift Mill 1	
Same less Supt,	51,80

Briquetting Plant day shift		
Supt.	4	10
Foreman	2	50
B line	1	25
Dryer	1	25
Mixer Kettles	1	50
" Watcher	1	25
2 firemen ovens	3	00
2 Under Brickers	2	50
2 Muck house	2	75
2 Loading	2	60
1 No 3 Slackt belts	1	25
1 Oiler	1	35
1 Engineer	3	00
1 Climax fireman	1	75
6 Bricker tenders	7	50
1 Repair Machinist	2	25
2 cleaners	2	50
1 Thermometer	1	25
1 Aero boiler man	1	35
	44	80

Night shift same except
4.10 less for Supt.

40.80



Mining — Day shift

Mine supt	4	00
" " assistant (night)	3	00
Surveyor	3	00
Vulcan crew	16	25
Victor crew	17	25
3 Locomotive	4	80
3 Brakesmen	4	50
2 Trimmers	2	50
12 Drillers	21	00
2 Loading	2	50
2 Blacksmiths	4	00
2 " Helpers	2	50
1 Genl foreman 4 men	7	50
2 Drill carriers	2	50
	95	30
12 night drillers until the Loco are put on drills	15	00

Mining night shift

Vulcan crew	16	25
Victor "	17	25
3 Locos	4	80
3 Brakesmen	4	50
2 Trimmers	4	50
12 Drillers	21	00
2 Loaders	2	50
2 Blacksmiths	4	00
2 " Helpers	2	50
2 Drill carriers	2	50
	79	80

General — Day shift

1 Oil house	1	35
1 Yard foreman	2	50
8 " men	10	00
2 Storeroom	3	25
1 Chief Clerk	4	00
1 " " asst	1	75
4 Clerks	9	00
1 Draughtsman	4	00
~~8~~ 5 Carpenters	11	25
1 Carpenter foreman	3	00
12 machinists	27	00
4 Boys	4	00
4 Helpers	5	00
1 Stable	1	50
3 Carts	3	75
1 Steam fitter	2	50
1 Chief Engineer	5	00

Master Mechanic	5	00
Asst Supt	6	00
Dam Engineer	1	75
Boss foreman	3	00
1 Muzzle man	1	25
3 assay	3	25
3 Blacksmith	4	00
2 " Helpers	2	50
2 Boys	2	00
1 Machine shop foreman	3	00
	130	60

General Night shift

1 oil	1	35	2 Boys	2	00
1 Yard foreman	2	50		59	85
5 " men	6	25			
2 Store	2	75			
1 Night clerk	2	00			
3 Watchmen	4	50			
3 Carpenters	6	75			
8 Machinists	10	00			
3 Machinist helpers	3	75			
3 " boys	3	00			
Night Machine foreman	3	00			
1 Steam fitter	2	50			
1 Dam Engr	1	75			
1 Muzzle man	1	25			
3 assay	3	25			
1 Blacksmith	2	00			
1 " Helper	1	25			

Day shift

Fuel etc	140	192	80
Power Plant		16	00
Crushing Plant.		39	05
Mill No 1		56	80
Briquetting.		44	90
Mining	110	95	30
General.	3	130	60
		575	45
		36	

Correct Oct. 1. 539

540 when ok Gulf -

18 pick and 4 Carpenter 8 helpers

30 strippers will be on for

overtime -

or 1/100, day Extra

Total 639. wages included

Night shift

Fuel	192	80
Power	12	00
Crushing plant	35	05
Mill 1	51	80
Briquetting	40	80
Mining	79	80
General.	59	85
	472	10

Expense 639 -

200 tons - cost		384
250 " "		320
275		297
300		278
325		261
350		247
375		235
400		224
425		214
450		206

Power 9,500 / 1,200 / 3,000

16.5 ore 15.5 net.

Basis 4.4 long tons per ton of 68% Concentrate.

Cost muck per crude ton 3163		4.4 c
" Dynamite	2	1.8 c
" Wear plates		3.0
" Other wear		2.0
" General wear		4.0
1463		15.2

per ton crude

Corrected Oct 1 64.3

66.8 cents added to each ton 68% Concentrate

one shift	Cons
1000 Tons 4.4	227
1500 "	340
2000 "	454
2500 "	567.
Yearly 300 days	
1000.	68 100
1500	102 000
2000	136 200
2500	170 100

Night & day shifts	
1000	227
1500	340
2000	454
2500	567
3000	681
3500	794
4000	908
4500	1021
5000	1135

Yearly	
1000	68100
1500	102000
2000	136200
2500	170400
3000	204300
3500	238350
4000	272400
4500	306000
5000	340000

Yearly Expense one shift

300 days $172.500

Yearly Expense both shifts

$314.265

to which must be added 66.8 Cents for every ton of concentrate briquetted.

1 shift 6c unit

1000 Crude 68100 Conc c

Cost	217	990
Receivs at 6c delivd less freight	230	178
(1/2%) Profit	12	188

1500 Crude 102000 Conc

Cost	240	990
Receivs	344	760
Profit	103	770

(4%)

2000 Crude 136000 C

Cost	263	460
Receivs	527	680
Profit	264	220

(10 1/2%)

2 shifts

1000	Cost	359	689
	Receivs	230	178
	Loss	129	511
1500	Cost	382	489
		344	760
	Loss	37	729
2000	Cost	405	113
	Receivs	459	680
	profit	54	567
(2%)			
2500	Cost	427	713
	Receivs	574	600
	Profit	146	887

(6%)

3000	Cost	450 000
	Recevin	689 520
9½%	Profit -	237 520
3500	Cost	472 000
	Recevin	804 440
13¼%		332 000
4000 -	Cost	495 000
		919 360
17%	profit	424 360
4500	Cost	516 500
		1034 280
20¾%		517 780
5000	Cost	540 000
		1149 000
24%	Profit -	609 000

7 shift 5c unit

1000 crude	Loss	33990
1500 "	Profit	34 410
2000 "	"	171 440

2 shifts - 5c

1000 ton	Loss	175 000
1500	"	107 000
2000	"	38 000
2500	profit	32 000
3000	"	101 000
3500	"	171 000
4000	"	240 000
4500	"	310 000
5000	"	378 000

from profit. There must be charged $54 000 for general charges and 13 000 for overall expenses in mills + mines and for repairs.

4.5 Cents unit

2 shift

1000 tons	loss	198 000
1500	"	142 000
2000	"	85 000
2500	"	26 000
3000	Profit	54 000
3500	"	89 000
4000	"	146 000
4500	"	206 000
5000	"	268 000

2 shift 6.5 unit.

1000	loss	106 000
1500	"	3 000
2000	Profit	100 000
2500	"	203 000
3000	"	310 000
3500	"	412 000
4000	"	516 000
4500	"	622 000
5000		724 000

Year	Cost	Profit at 6¢	Profit at 7¢
1906	1,007,000	1,037,000	935,000
1907	1,144,000	801,000	1,144,000
1908	1,260,000	963,000	1,335,000
1909	1,385,000	1,116,000	1,532,000
1910	1,572,000	1,270,000	1,834,000

See about 2 foot under new bracket

Cripple Creek

200 Ton mill 200,000

47¢ for mining + Crushing 40 mesh,

based on 7¢ strong wages

	Second
Chaining	30
Hoisting	19
Running in	10.6
Lowering in Cradle.	8.5
Dumping-	
Roll feed empty	3
getting out Cradle	10
Return-lowering	43
	123.

for 2 shovels Locos etc
Loads for 2000 tons including
Drilling powder Coal &
depend $1.35.000 — 2 shifts
This is for Taking out 2000
tons Hoppers in 2 ½ hours
it would make over 4000
tons about 60% more

25 ~~[illegible]~~

26 Extension sand Conveyor

A27 Old Casing gears 21 Conveyor

28 ~~[illegible]~~

B29 Brace tops 4" mag frames

D30 ~~Secure [illegible]~~

31 ~~Aux pump [illegible]~~

~~Dump [illegible]~~

32 Stringer clutch 14 3H Pulley

A sag finder clutch belt

33 ~~Soften~~ fall on screen over 3H

A34 Check plate 3H keep on in

A35 ~~New belt 12 Conveyor [illegible]~~

A36 ~~Adjust [illegible]~~

~~Conveyor belt [illegible]~~

37 Ventilate from stock H 2

38 Screen over drip tank [illegible]

39 ~~[illegible]~~

~~[illegible]~~

9 iron feed holes 12" max pitch
Trying experiment iron parting
boards —

Money in bank Jany 27 12 000

~~Feby 7 76 00~~

Notes to July 38938
4264
38933

Edison 82 200

Olsen accts Feby 2nd 6591.

Feby 7th 7600 —

~~Feby 7th 9000 in bank~~

~~Feby 16 12 00~~

" 19 8500

Feby

~~1 Notes 1700 00~~

4th " & Nat'l co ~~6000 00~~

~~4th Stages 900 00~~

PAY ROLL

~~5 Cash Nat'l Bank 1250 00~~

25 ~~Orange 400 00~~

" O.G.C 1250 00

~~10th Upton & ins 1500 00~~

~~25 Brooklyn Trust Co 1500 00~~

15 Royalties 1220 new
600 latter - 1800 00

~~25 Cleveland Gas 1900 00~~

~~26 Vulcan 1750 00~~

~~28 Vulcan 1500 00~~

1790 00

Oct & Nov accts 952 00

~~Sherman Fur Co 900 00~~

March				April			
31st	Taxes 500 bal 1st qtr	500		1st	Notes	5198	00
~~1st~~	~~Notes~~	~~3075~~	~~00~~	6	"	269	00
	~~Notes renewable~~	~~8006~~	~~00~~	20	"	1071	00
8	Poly 1/2 renewable	2060	00	20	Alexander note	17000	00
15	N.Y.C open acct	433 ~~[illegible]~~	00		Jerry open acct	~~[illegible]~~	
20	Bergmann note	5000	00	25	Orange	400	00
	PAY ROLL	5700	—	25	O.J.C	250	00
22	O.J.C	250	00	24th	Russell Loan	20000	00
25	Orange	400	00		~~Payroll~~		
					Insurance		
					PAY ROLL		
	1400			30	Notes —	14252	00
	3075				5198	32000	total
	1030				269	25000	
	621				1071		
	5000				2500		
	650				650		
	11776				5000	+ Russell	20000
					14698	+ Alexander	17000

May

3rd	E9Co note	2738 00
11th	Bergmann note	5000 00
	~~Notes~~	~~10668~~
	PAYROLL	5000
	Feby open accts	613 2
	Royalties	
	~~Insurance~~	
25	Orange	400 00
"	OGC	250 00
	~~Royalties~~	
	~~Insurance~~	
15	Bergmann Note	5000
1st	Notes	405
3rd	"	6997
8	"	1040
20	"	1519
30	"	700

June

1	~~Notes~~	~~[illegible]~~
	March open accts	
	PAYROLL	5000
	OGC	250
	Orange	400
	Royalties	
	Insurance	
22nd	Oper loan Remunerat	8000 00
25	~~Chemcraft~~	~~[illegible]~~
25	~~Vulcan~~	~~[illegible]~~
1st	Notes	7450 —
14	Bergmann Note	5000 —
21	Notes	~~[illegible]~~
23	"	6403 —
25	"	4006 —

	July				Aug		
1st	~~Notes~~	~~1086~~	~~00~~				
17	Mrs Upton	700	00				
	OGC	250	00		10 Upton transfer	6500	00
	Grange	400					
	April open accts			18th	Gaunt & Batch	10000	00.
	PAY ROLL						
	Insurance						
	Royalty						
1st	Taxes	900	00				
1	Water	2143	-				
2	"	1050	-				
25	"	1086	-				
	Notes to Sly & Co 1688-?						
	" Moore 1350-?						

February

~~Royalties~~ 18.00
~~Oct & Nov accts~~ 952

Contents in Tons of cones of Concentrate stock H 1902

Cone 1 ft	.11	Ton
2	.91	"
3	3.01	"
4	7.34	"
5	14.33	
6	24.79	
7	39.27	
8	58.75	
9	83.67	
10	114.5	
11	152.8	
12	198.3	
13	252.2	
14	314.9	

March

~~5~~	~~Note S Shovel~~	~~1030~~
	~~Payroll~~	~~5500~~
	~~Dec open acct~~	~~1433~~
20	Bergman	5000
	O&C	250
	Orange	400

Unfilled orders	31st	1446
Bills to	31	2828
Cash in	31	1000

April

1	Notes	[illegible]
~~6~~	"	~~269~~
20	"	1091
~~20~~	~~Alexander~~	~~12000~~
	~~Gang open acct~~	~~959~~
	~~Orange~~	~~400~~
	~~O&C~~	~~250~~
~~24~~	~~Kissell~~	~~20000~~
~~30~~	~~Note (Renewal)~~	~~2552~~
	~~Payroll~~	~~$ 7[illegible]~~
	~~Gang open acct~~	~~[illegible]~~
	Payroll	7527
29	Insurance	1357
29th	Bills for april	[illegible]
29	Coal	468
	March Coal	1615

May

1	~~Note~~	~~1400~~
~~3~~	~~"~~	~~6997~~
~~3~~	~~E&C note~~	~~2438~~
8	Note	1040
~~11~~	~~Bergman~~	~~5000~~
15	Bergman	5000
20	Note	1519
	Orange	400
	O&C	250
	Pay roll.	~~6780~~
	~~Open accts 4/29~~	~~678~~
30	Note	700

Royalties —

Open act McN	1223
Mny bills to 6th	1329
Unfilled orders 6th	1194

June

1st	Notes	7450
4th	" German Ntl	5000
21	Notes	1575
22	Dyers loan	8000
23	Notes	6403
25	"	4006
	Payroll.	
	Orange	
	O&C	
	Open accts	
	Bergman	
	Royalties	

July		
1	Taxes	900
1	Note	4055
2	"	1050
17	" Mrs Upton	700
20	"	1086
9th	Note	5000
	~~Publishment Taxes~~	~~1600~~
	~~Insurance Taxes~~	~~1500~~
	Payroll	
29	Note	487
20	Alexander	12000

August		
10	Upton & wife	6500
19	Balch & Grant	10000
1st	Note	2035
1st	Note,	3501
30	Note	2603

Sept				Oct			
25	National Searles Loan	10 000.			May	400	
29	Nat.	493					

Long depreciation on
Crushing plant outside of
Repairs + regular wear

$3486.00

Mill 1

14705.00

Briquetting 19350.00

37541.

November

Fisman-June 992

P&S May 7.

25591.

December

Insurance policy 512

grade	output	Extra Cost Daily	Total Daily Cost	Cost per Ton Product	Increase Cost per Ton Crude	6.0	6.5	7	7.5
16.5	4000	#	1047	1.78		130	164	198	232
15.5	4300	57.00	1104	1.84	6	124	158	192	226
14.5	4600	114	1161	1.90	6	118	152	186	220
13.5	4900	171	1218	1.97	7	111	145	179	213
12.5	5300	247	1294	2.05	8	103	137	171	205
11.5	5800	342	1384	2.16	10	92	126	160	194
10.5	6300	437	1484	2.26	11	82	116	150	184
9.5	7000	550	1597	2.38	12	70	104	138	172
8.5	7800	702	1749	2.55	17	53	87	121	155
7.5	8800	892	1939	2.76	21	32	66	100	134
6.5	10200	1158	2205	3.05	29	3	37	71	105
5.5	13100	1709	2757	3.66	61	=58	=24	10	44

Concentrate 9.08 tons.
1 unit lost in tails
Mining cost Constant 7.35 Ton Crude
Wear & coal proportional to crude

8X10 - Drilling 15 Dy-
Wear 7 Coal 4.8 Crude

Profit ton Briquettes
9.08 tons daily output
Weight 1.5

Holes 20 deep, cost drilling per hole.
$120 – Depreciation ~~[illegible]~~

	Tons	Cost	
4X3	19.2	18.2	
4X4	25.7	13.6	4000 Tons day
5X4	32.1	10.9	Saving
6X5	48.2	7.26	Yearly
6X6	57.9	6.05	
7X6	67.5	5.18	83 000
8X6	71.1	4.92	
8X7	90	3.88	
8X8	103	3.39	
9X8	115	3.43	
9X9	130	2.69	
10X9	144	2.43	20 000
11X10	177	1.97	
12X11	212	1.64	
12X12	250	1.40	5000
14X13	292	1.19	

Depreciation

		Price	
30 Buckers	40000	10%	4000
4 Mixers	7000	10	700
1 Dryer	1000	6	60
16 Ovens	35000	15%	5250
Buildings	35000	8%	2800
Belt conveyors	8000	20%	1600
Stackhouse	15000	8%	1200
Rope Conveyors	4000	10%	400
Scraper "	800	30%	240
Muck House	2000	20%	400
Engine	6000	10%	600
Boiler	4000	10%	400
Gearing	4000	20%	800
Other moving parts	4000	20%	800
			19350

Oz. pan and gold

	Mesh	Milligrams	Cents
1	On 1/4	260	4.40
	1/8	200	3.4
	092	110	1.8
	072	130	2.2
	058	270	4.5
	045	240	4.4
	035	190	3.2
	027	370	6.27
	020	320	5.42
	015	120	2.00
	012	80	1.30
	009	60	1.00
	007	10	0.20
	005	3	
			40 Cents

Leave off 1/4 3516

1/8 3212

" 7+5 mesh 32,

150 pans to Cubic yard

20 lbs per miners pan

1 sqr inch Hg 7.11.3
" " hho 32768 $\frac{1}{32}$ s sqr
" " 210 grammes
" " 210000 milgms
" " 1024 inches long $\frac{1}{32}$ d/s
1 milimpere deposits 3.73 milgms hour
1/32 sqr inch ampho 6.4 milgms -
in .008 Gors 1/32 inch sqrs
15/32 movement,

	am
12" mag	15
8	12
4	17

Gold

1 oz sample of ore on of Clara

		Tow
1 Color	1/1000	1.2 Cent
1 "	2/1000	10 Cent
1 "	3 "	33
1	4 "	81
1	5 "	156

4 to ow -

1	15/1000	8.43
	20	10.00
	27	24.60
	35	53.50
	45	113.90
	58	243.89

Mineral		lbs		
		94		[illegible]
1	discarded	40		8460
3	screen [illegible] 1/2"	31		6572
3	1/4 mesh hole	3		636
4	1/8	4		848
	092	2		424
	072	1 1/2		322
	058	1		212
	045	2		424
	035	2 1/2		530
	027	1 1/2		322
	020	3		636
	015	1		212
	012	1		212
	09	3 1/2	03	42
	07	4 1/2	03	60
	05	9	03	120
	04	1 1/2		20

		Fe	P	[illegible]
Chapin	$2.56	62.05	.066	58.21
Ray	234	56.96	.063	53.45
Palma	260	63.03	.058	54.90
Brockton	274	62.58	.055	54.84
Minnesota	336	67.98	.046	67.38
Norris	284	63.88	.039	57.31
Atlantic	273			
Chandler	313			
Aurora	295	62.44	.028	56.20
Republic Spcl	365			
" Specular	335			
" Magnetic	327			
Kingston	317			
Ashland	280			
Pioneer	303			
Angelina Hard	364			

Mills for — gold, silver, copper, zinc, lead,
Tin, Iron, graphite, Portland Cement,
Common Cement, plaster, Gypsum,
Concrete, ballast, wood-working,
Mineral paints, clay paints, phosphate rock
Dorsey process phosphate clay, Quartz,
Emery, Mattey, Feldspar, Talc
Limestone, pumice, magnesite,
Ferromanganese, Marble, (white) clay
Asphaltic Limestone, Bone phosphate,
Asbestos mining, Antimony Concrete,
Portland (90% min required, dense bodies)
flint, Mica paint, Barytes.

4-5 Conveyor

Buckets hauling		
20		90 tons hour
30	~~96~~	141 "
40	~~192~~	188 "
50	~~237~~	235
60	273	282
70	318	330
74	336	348

4-5 Conveyor

1 lb is 4.16 Tons,
at 172 buckets per min

Air separation 1

Weight -

Taking .001 as weighing 1 milligram

3	27
5	125
7	343
9	729
12	1.728
16	3.096
20	8.000
27	19.683
35	48.750
45	91.125
60	216.000
80	512.000

Surface

Taking .001 as surface

	Sq. mils
	.006
	.0
3	.054
5	.150
7	.294
9	.486
12	.864
16	1.536
20	2.400
27	4.374
35	7.350
45	12.150
60	21.600
80	38.400

	8	4
12"	1.2 amp	17 amp
15 amp	140 V	85 Volt
66 V	226 amp	170 55 Total
300 Total		272

Math Underhill
Number 1800 ft long
150 turns 80 turns
Magnetor –
3½ on 2nd Tests

Feet Gone	30	35	40	45	50
First Tests 1½	1.97	1.9	1.52	1.37	1.26
" 1¾	2.3	2.05	1.91	1.78	1.69
" 2½	2.57	2.41	2.29	2.21	2.14
" 2⅝	2.87	2.77	2.69	2.64	2.57